2001 MICHIGAN BLACK BEAR HUNTER SURVEY

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ABSTRACT

A survey of bear hunters was conducted following the 2001 hunting season to determine hunter participation, hunting methods, bear harvest, and hunter satisfaction. In 2001, an estimated 7,745 hunters spent 52,923 days afield and harvested 2,268 bears, an increase in harvest of 13% from 2000. Statewide, 29% of hunters harvested a bear. Baiting was the most common hunting method used to locate and harvest bears. Statewide, most hunters (57%) rated their hunting experience as very good or good. Also, most hunters (73%) approved of the preference-point system for the distribution of hunting licenses.

INTRODUCTION

Beginning in 1990, the Michigan Department of Natural Resources (MDNR) created black bear (*Ursus americanus*) management units (Figure 1) and limited the number of bear hunting licenses issued for each unit. Before 1990, an unlimited number of bear licenses were sold, and licenses were valid in all areas open to bear hunting. In 2000, the MDNR modified the licensing system by implementing a preference-point system for issuing bear hunting licenses. Under this system, hunters received one preference point if they applied for a hunt but were not selected in the drawing. Hunters also could obtain a preference point by completing an application but forgoing the drawing. Applicants with the greatest number of preference points had the greatest chance of being selected for a hunt.

In 2001, ten bear management units in northern Michigan totaling 28,923 square miles were open for bear hunting (Figure 1). Bear could be hunted September 10 – October 26 in most of the Upper Peninsula (UP) units except the Drummond Management Unit (September 10-16)

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and September 21–27 in the northern Lower Peninsula units. The Red Oak Management Unit in the Lower Peninsula also had an archery-only hunt during October 5-11. The Wildlife Division set license quotas for each management unit and allocated 9,890 licenses among 46,340 eligible applicants using the preference-point system. Licenses were valid on all land ownership types and allowed a hunter to take one bear of either sex, excluding cubs and female bears with cubs. Bear could be harvested with either firearm or archery equipment, except for the special archery-only hunt in the Red Oak Management Unit. Hunters could use bait or dogs to hunt bears (except dogs could not be used during September 10-15 in the UP and during the archery-only season in the Red Oak Management Unit).

The MDNR has the authority and responsibility to protect and manage the wildlife resources of the State of Michigan. Harvest surveys are one of the primary management tools used by the Wildlife Division to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are among the primary objectives of these surveys. Estimates derived from harvest surveys, as well as harvest reported by hunters at mandatory registration stations, are used to monitor bear populations and establish harvest regulations.

METHODS

Following the 2001 bear hunting season, a questionnaire was sent to 3,458 randomly selected successful applicants that had purchased a bear hunting license (resident, senior, and nonresident bear licenses, and comprehensive lifetime license). Hunters receiving the questionnaire were asked to report whether they hunted, number of days spent afield, whether they harvested a bear, and their hunting methods. Successful hunters also were asked to report harvest date, sex of the bear taken, and harvest method. Finally, all bear hunters were asked to rate their overall hunting experience and indicate whether they approved of the preference-point system that was used to distribute hunting licenses.

Estimates were calculated using a stratified random sampling design (Cochran 1977) and were presented along with their 95% confidence limit (CL). This confidence limit could be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implied that the true value would be within this interval 95 times out of 100. Estimates were not adjusted for possible response or nonresponse bias.

Questionnaires were initially mailed during early November 2001. A reminder note and up to two follow-up questionnaires were mailed to nonrespondents. Although 3,458 people were sent the questionnaire, 33 surveys were undeliverable resulting in an adjusted sample size of 3,425. Questionnaires were returned by 2,962 people, yielding an 86% adjusted response rate.

RESULTS

In 2001, 8,262 licenses were purchased for the bear hunting season, and 94% (±1%) of these license buyers hunted bears (Table 1 and 2). These hunters spent 52,923 days afield ($\bar{x} =$ 6.8 days/hunter) and harvested 2,268 bears, a 13% increase in harvest from 2000 (Figure 2,

Table 2). The number of hunters and hunting effort, as well as the number of bear harvested, in 2001 were the highest number recorded since the present bear management system was initiated in 1990 (Figure 2). Counties having the highest number of bear hunters and bears harvested included Gogebic, Marquette, Ontonagon, and Baraga (Table 3).

Bear hunters spent 13,310 days afield on private land, 16,663 days hunting on public land only, and 8,268 days hunting on both private and public lands (Table 4). Of the 2,268 bear harvested in 2001, 43 ± 3% of these bears were taken on private land (969 ± 82 bears). About 57 ± 2% of the harvest (1,285 ± 94 bears) were taken on public land. A few bear (14 ± 12 bears) were harvested from land of unknown ownership.

Of the bears harvested, 58 ± 3% were males (1,324 ± 95 bears) and 40 ± 3% females (907 ± 80, Table 5). Statewide, 29% of hunters harvested a bear in 2001 (Table 2), a small increase from 27% last year (Frawley 2001). Hunter success ranged from 13-61% among the bear management units.

Most hunters (77 ± 1%) used only firearms while hunting bear, although 23 ± 1% of the hunters used archery equipment only or a combination of firearm and archery equipment (Table 6). Moreover, most hunters (81 ± 1%) relied primarily on baiting as a means of locating and attracting bears (Table 7). About 13 ± 1% of hunters relied primarily on dogs alone or in combination with baiting to locate bears.   About 4% of hunters relied on a hunting method not involving dogs or bait.

About 82 ± 2% of the harvested bears were taken with the aid of bait (Table 8). The proportion of bears harvested with bait was nearly identical to the proportion of hunters using bait as their primary means of locating bears (82% versus 81%; Tables 7 and 8).   Although 13% of the hunters depended primarily on dogs to locate bears, 17 ± 2% of the harvested bears were taken using dogs. Consequently, hunters using dogs were more likely to harvest a bear than hunters relying on bait only.

Hunter satisfaction is one measure used to assess the Black Bear Management Program in Michigan. Statewide, most hunters (57 ± 2%) rated their hunting experiences as very good or good and 21 ± 1% rated their hunting experiences as being poor or very poor (Tables 3 and 9). Hunter satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Figure 3). In 2001, 25 ± 1% of the hunters (1,936 ± 108 hunters) were interfered during their hunt by other hunters. Generally, hunters in the Upper Peninsula were less likely to be interfered by other hunters than hunters in the Lower Peninsula (Tables 3 and 9, Figure 4).

In 2000, a preference–point system was implemented for distributing bear hunting licenses. Hunters were asked whether they approved of this distribution system. Most hunters (73 ± 1%) approved or strongly approved of the system. About 19 ± 1% of the hunters indicated that they were not sure about the system and 7 ± 1% disapproved or strongly disapproved of the system.

ACKNOWLEDGEMENTS

LITERATURE CITED

Cochran, W. G. 1977. Sampling techniques. John Wiley & Sons, New York. USA.

Frawley, B. J., 2001. 2000 Michigan black bear hunter survey. Wildlife Division Report 3334. Michigan Department of Natural Resources, Lansing, USA.
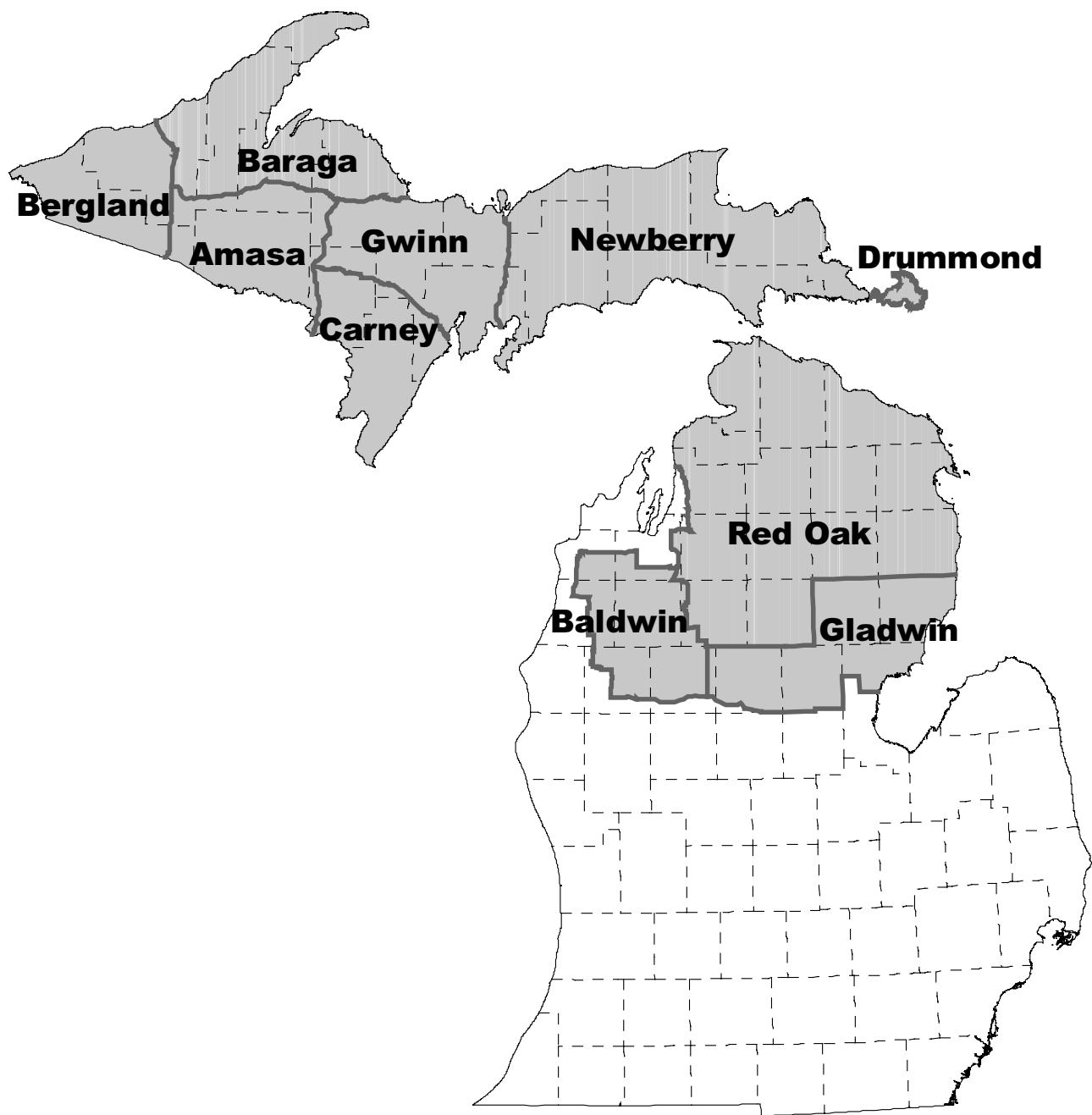
Figure 1. 2001 bear management units in northern Michigan.
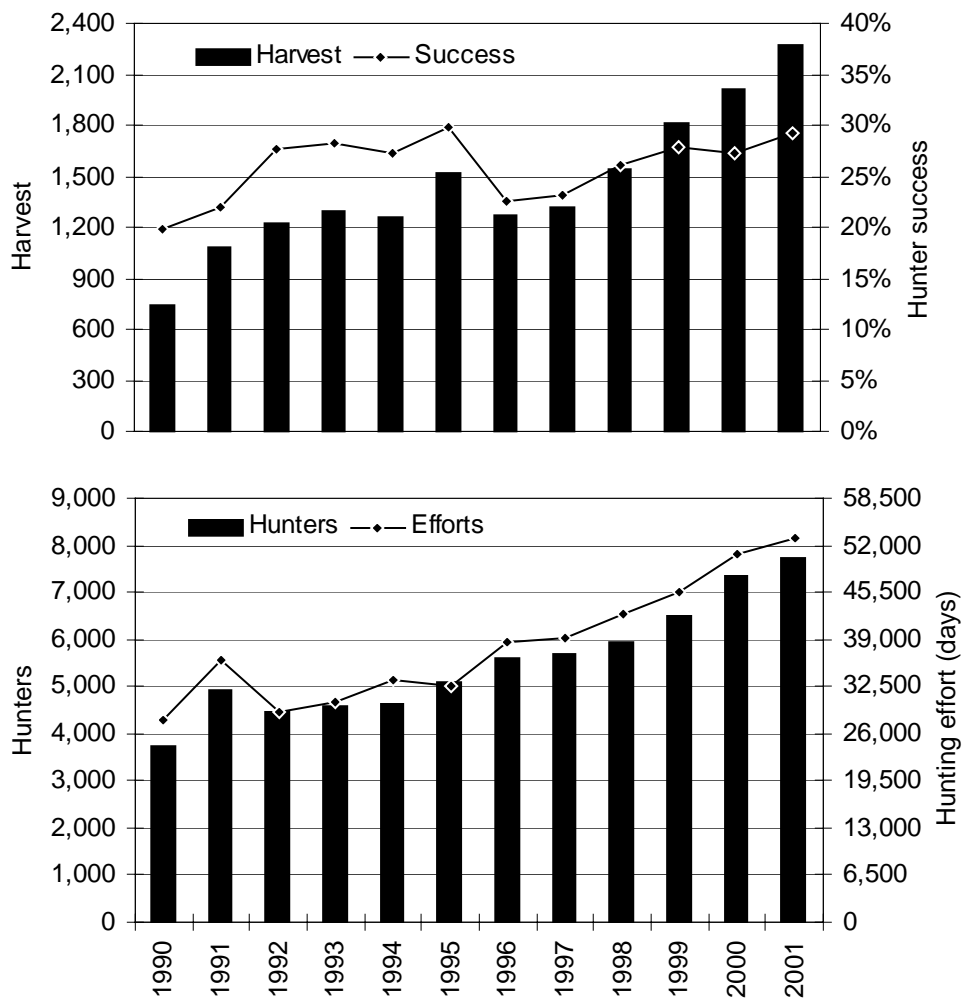
Figure 2. Number of hunters, harvest, hunting effort, and hunting success during bear hunting seasons, 1990-2001.
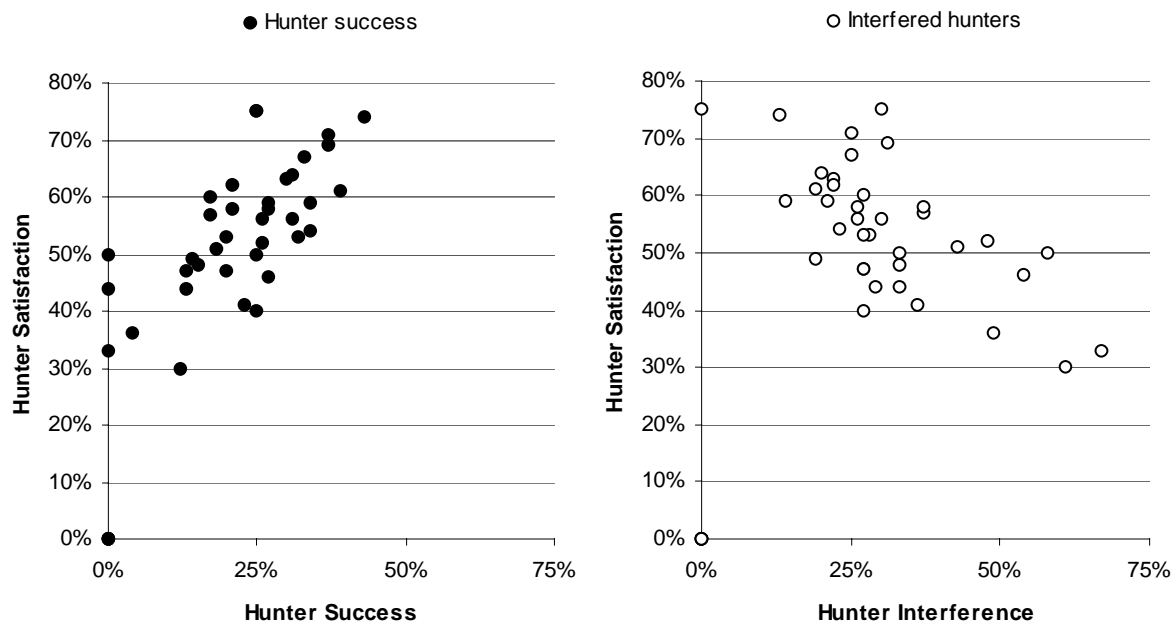
Figure 3. Hunter satisfaction (hunters rating their hunting experience as very good or good) associated with hunter success and hunter interference for each of 40 counties in Michigan during the 2001 bear hunting season. Interference was the proportion of hunters that reported interference from other hunters.
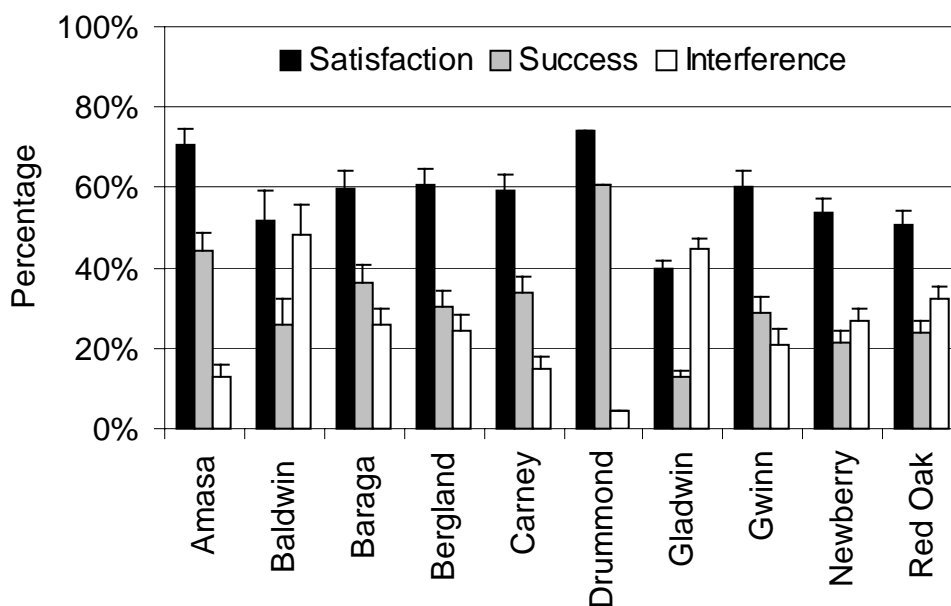
Figure 4. Hunter satisfaction, hunting success, and level of hunter interference in Michigan during the 2001 bear hunting season. Satisfaction measures the proportion of hunters rating their hunting experiences as very good or good. Error bars represent the 95% confidence limit. Interference was the proportion of hunters that reported interference from other hunters.

Table 1. Number of people purchasing hunting licenses for the 2000 and 2001 Michigan bear hunting season.

| Management unit | Licenses sold in 2000 | 2001 | | |
		Licenses available	Number of eligible applicants	Licenses sold
Amasa	402	520	2,686	464
Baldwin	36	50	1,335	41
Baraga	1,651	2,050	6,532	1,729
Bergland	1,269	1,570	3,199	1,219
Carney	619	840	2,987	717
Drummond	11	20	490	23
Gladwin	85	240	664	179
Gwinn	867	1,090	4,347	905
Newberry	1,967	2,250	11,425	1,874
Red Oak	992	1,260	12,675	1,111
Applicants opting for Preference Point[a]	3,532		6,839	
Statewide	7,899	9,890	53,179	8,262

[a]Applicants that chose to receive a preference point rather than enter into the drawing for a hunting license.

Table 2. Number of hunters, harvest, hunter success, and hunting effort during the 2001 Michigan bear hunting season.

Manage-ment unit	Hunters		Harvest		Hunter success		Hunting effort		Days per hunter ($\bar{x}$)	
	No.	95% CL[a]	No.	95% CL[a]	%	95% CL[a]	Days	95% CL[a]	Days	95% CL[a]
Amasa	426	11	188	20	44%	4%	2,698	243	6.3	0.5
Baldwin	37	2	10	2	26%	6%	176	17	4.7	0.4
Baraga	1,631	34	594	70	36%	4%	10,277	923	6.3	0.5
Bergland	1,140	26	345	48	30%	4%	7,694	615	6.8	0.5
Carney	691	12	233	29	34%	4%	5,712	473	8.3	0.7
Drummond	23	0	14	0	61%	0%	82	0	3.6	0.0
Gladwin	170	2	22	3	13%	2%	731	19	4.3	0.1
Gwinn	836	20	240	34	29%	4%	6,522	497	7.8	0.6
Newberry	1,752	31	375	50	21%	3%	13,734	798	7.8	0.4
Red Oak	1,040	18	247	30	24%	3%	5,297	265	5.1	0.2
Statewide[b]	7,745	62	2,268	114	29%	1%	52,923	1,571	6.8	0.2

[a] 95% confidence limits.
[b] Column totals may not equal statewide totals because of rounding errors.

Table 3. Number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2001 Michigan bear hunting season.

County	Hunters[a] Total	Hunters[a] 95% CL	Harvest[a] Total	Harvest[a] 95% CL	Hunter success %	Hunter success 95% CL	Hunting efforts (days)[a] Total	Hunting efforts (days)[a] 95% CL	Hunter satisfaction[b] %	Hunter satisfaction[b] 95% CL	Noninterfered hunters[c] %	Noninterfered hunters[c] 95% CL
Alcona	138	24	53	15	39%	9%	514	106	61%	9%	81%	7%
Alger	300	45	111	28	37%	8%	1,882	374	71%	7%	75%	7%
Alpena	100	22	20	10	20%	9%	451	119	47%	11%	73%	11%
Antrim	20	10	0	0	0%	0%	118	61	44%	24%	56%	24%
Arenac	4	1	1	1	25%	12%	9	3	75%	12%	100%	0%
Baraga	829	76	257	52	31%	6%	4,429	606	56%	6%	72%	6%
Benzie	0	0	0	0	0%	0%	0	0	0%	0%	0%	0%
Charlevoix	13	8	0	0	0%	0%	65	39	50%	30%	50%	30%
Cheboygan	117	23	29	12	25%	9%	518	122	40%	10%	71%	9%
Chippewa	423	51	83	23	20%	5%	3,400	549	53%	7%	67%	6%
Clare	24	3	5	1	23%	5%	100	13	41%	6%	64%	6%
Crawford	42	14	9	6	21%	14%	232	91	58%	16%	74%	15%
Delta	397	46	107	25	27%	6%	2,850	436	59%	6%	78%	5%
Dickinson	273	36	84	22	31%	7%	2,122	385	64%	7%	79%	6%
Emmet	45	14	11	7	25%	14%	187	76	75%	14%	70%	15%
Gladwin	58	7	2	1	4%	2%	246	24	36%	5%	45%	6%
Gogebic	563	54	178	37	32%	6%	3,862	523	53%	6%	71%	6%

[a]Number of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.
[b]Proportion of hunters that rated their hunting experience as very good, or good.
[c]Proportion of hunters that indicated that they experienced no interference from other hunters.

Table 3 (continued). Number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2001 Michigan bear hunting season.

County	Hunters[a]		Harvest[a]		Hunter success		Hunting efforts (days)[a]		Hunter satisfaction[b]		Noninterfered hunters[c]	
	Total	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	%	95% CL
Gd Traverse	0	0	0	0	0%	0%	0	0	0%	0%	0%	0%
Houghton	364	60	124	38	34%	9%	2,273	524	54%	9%	77%	8%
Iosco	36	4	4	1	12%	3%	166	36	30%	5%	39%	6%
Iron	331	23	141	18	43%	5%	2,104	257	74%	5%	87%	3%
Kalkaska	53	16	7	6	13%	10%	235	78	44%	15%	66%	14%
Keweenaw	162	43	60	27	37%	14%	1,099	425	69%	13%	69%	13%
Lake	14	3	4	2	25%	10%	69	15	50%	12%	42%	12%
Luce	558	57	72	24	13%	4%	4,011	584	47%	6%	71%	5%
Mackinac	303	46	78	25	26%	7%	2,049	402	56%	8%	70%	8%
Manistee	4	2	0	0	0%	0%	16	8	33%	22%	33%	22%
Marquette	664	66	198	41	30%	5%	4,321	545	63%	5%	75%	5%
Menominee	483	30	162	26	34%	5%	4,128	466	59%	5%	85%	4%
Missaukee	108	22	18	9	17%	8%	470	113	57%	10%	61%	10%
Montmorency	134	25	24	11	18%	7%	729	171	51%	10%	57%	10%
Ogmaw	57	5	9	2	15%	3%	249	21	48%	5%	65%	4%
Ontonagon	713	68	232	46	33%	6%	4,631	630	67%	6%	74%	5%
Osceola	2	1	0	0	0%	0%	8	5	0%	0%	100%	0%

[a]Number of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.
[b]Proportion of hunters that rated their hunting experience as very good, or good.
[c]Proportion of hunters that indicated that they experienced no interference from other hunters.

Table 3 (continued). Number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2001 Michigan bear hunting season.

County	Hunters[a]		Harvest[a]		Hunter success		Hunting efforts (days)[a]		Hunter satisfaction[b]		Noninterfered hunters[c]	
	Total	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	%	95% CL
Oscoda	58	16	16	9	27%	13%	298	95	46%	14%	46%	14%
Ostsego	67	17	11	7	17%	10%	356	130	60%	13%	73%	12%
Presque Isle	127	23	18	9	14%	7%	619	137	49%	10%	79%	8%
Roscommon	111	22	29	12	26%	9%	572	136	52%	10%	50%	10%
Schoolcraft	372	50	78	25	21%	6%	2,727	510	62%	7%	78%	6%
Wexford	23	4	6	2	27%	9%	88	17	58%	12%	63%	10%
Unknown	130	32	26	16	18%	10%	719	216	54%	12%	69%	11%

[a]Number of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.
[b]Proportion of hunters that rated their hunting experience as very good, or good.
[c]Proportion of hunters that indicated that they experienced no interference from other hunters.

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Table 4. Number of days of hunting effort on private and public lands during the 2001 Michigan bear hunting season.

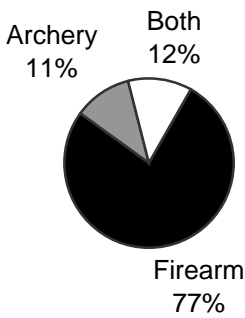| Management unit	Private lands		Public lands		Both private and public lands		Unknown	
	Total	95% CL	Total	95% CL	Total	95% CL	Total	95% CL
Amasa	901	163	831	199	453	122	513	130
Baldwin	18	9	47	13	40	17	71	14
Baraga	2,268	484	3,021	743	1,906	497	3,081	624
Bergland	1,136	325	2,982	453	1,546	429	2,030	456
Carney	2,434	372	515	195	1,067	335	1,696	317
Drummond	16	0	17	0	13	0	36	0
Gladwin	177	16	271	20	61	12	223	17
Gwinn	1,578	348	1,794	345	1,215	305	1,935	370
Newberry	2,916	474	5,772	722	1,511	420	3,535	537
Red Oak	1,866	213	1,414	200	456	129	1,561	225
Statewide[a]	13,310	947	16,663	1,231	8,268	920	14,682	1,092

[a]Column totals may not equal statewide totals because of rounding errors.

Table 5. Number of hunters, harvest, and hunting effort (days) during Michigan bear hunting season, 1995-2001.

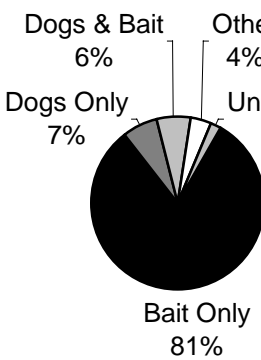|				Year			
Region	1995	1996	1997	1998	1999	2000	2001
Upper Peninsula							
Applicants	18,280	20,082	21,224	25,620	26,833	31,277	31,666
Licenses sold	4,684	5,428	5,490	5,242	5,818	6,786	8,337
Hunters	4,242	4,705	4,732	4,961	5,511	6,308	6,492
Harvest	1,386	1,154	1,116	1,353	1,590	1,781	1,990
Males (%)	55	64	54	59	65	58	59
Females (%)	44	36	45	40	34	40	39
Unknown (%)	1	0	1	1	1	2	2
Hunter-days	29,036	34,690	34,195	37,123	40,452	45,403	46,719
Hunter success (%)	33	25	24	27	29	28	31
Lower Peninsula							
Applicants	5,365	6,646	7,904	10,295	11,073	13,887	14,674
Licenses sold	968	1,040	1,135	1,039	1,062	1,113	1,544
Hunters	852	905	961	993	1,005	1,058	1,247
Harvest	136	112	199	192	227	230	279
Males (%)	56	61	53	63	64	57	55
Females (%)	44	37	44	35	36	41	45
Unknown (%)	0	2	3	2	0	2	0
Hunter-days	3,634	4,051	4,877	4,629	5,069	5,259	6,204
Hunter success (%)	16	12	21	19	23	22	22
Statewide							
Applicants[a]	23,645	26,728	29,128	35,915	37,906	48,696	53,179
Licenses sold	5,652	6,468	6,625	6,281	6,880	7,899	9,881
Hunters	5,094	5,610	5,693	5,956	6,516	7,365	7,739
Harvest	1,522	1,266	1,315	1,545	1,817	2,011	2,268
Males (%)	55	64	54	59	65	58	58
Females (%)	44	36	45	39	34	40	40
Unknown (%)	1	0	1	2	1	2	2
Hunter-days	32,670	38,741	39,072	41,752	45,521	50,664	52,923
Hunter success (%)	30	23	23	26	28	27	29

[a]Beginning in 2000, the number of applicants statewide also included people that applied for a preference point.

Table 6. Hunting equipment used to hunt bear in Michigan, 2001.

Equipment	Number of hunters	95% CL[a]	Equipment used (%)
Firearm	5,928	114	
Archery	858	79	
Both firearm and archery	935	79	
Unknown	24	14	

[a] 95% confidence limits.

Table 7. Primary hunting methods used to hunt bear in Michigan, 2001.

Method	Number of hunters	95% CL[a]	Method used (%)
Bait only	6,285	109	
Dogs only	520	61	
Dogs and bait	479	59	
Other	310	49	
Unknown	151	34	

[a] 95% confidence limits.

Table 8. Hunting methods used to harvest bear in Michigan, 2001.

Method	Number of hunters	95% CL[a]	Method used (%)
Bait only	1,862	107	
Dogs only	175	38	
Dogs and bait	210	40	
Other	10	10	
Unknown	11	10	

[a] 95% confidence limits.

Dogs & Bait 9%
Other 0.4%
Dogs Only 8%
Unknown 0.5%
Bait Only 83%

Table 9. Level of hunter interference and satisfaction of bear hunters with their hunting experience in Michigan during the 2001 season.

Manage-ment unit	Hunter success (%)	Hunters interfered by other hunters (%)	Satisfaction level (%)					
			Very good	Good	Neutral	Poor	Very poor	No answer
Amasa	44%	13%	36%	34%	18%	7%	3%	1%
Baldwin	26%	48%	29%	23%	16%	16%	16%	0%
Baraga	36%	26%	29%	31%	22%	10%	6%	2%
Bergland	30%	25%	22%	38%	19%	14%	6%	1%
Carney	34%	15%	23%	36%	22%	14%	4%	1%
Drummond	61%	4%	30%	43%	17%	4%	4%	0%
Gladwin	13%	45%	12%	28%	20%	21%	19%	1%
Gwinn	29%	21%	25%	35%	19%	10%	9%	2%
Newberry	21%	27%	18%	36%	20%	15%	10%	1%
Red Oak	24%	32%	19%	32%	17%	17%	13%	2%
Statewide	29%	25%	23%	34%	20%	13%	8%	1%